REMARKS

Reconsideration of this application and the rejection of claims 26-31, 34-40, 43, 44 and 46 are respectfully requested. Applicant has attempted to address every objection and ground for rejection in the Office Action dated March 15, 2006 (Paper No. 030306), and believes the application is now in condition for allowance. The claims have been amended to more clearly describe the present invention.

Claims 32, 33, 41, 42 and 45, drawn to the nonelected species are canceled here, and Applicant reserves the right to timely file a divisional application based on those claims.

Claims 26-31, 34-40, 43-44 and 46 stand rejected under 35 USC §103(a) as being obvious in view of a combination of Li et al. (US 5,659,492) and Sandhu (US 5,658,183). The Examiner indicated in par. 4 of the Action that according to Li, after processing, the thickness of the layer is measured and the difference between the desired thickness and the actual thickness is used to adjust the endpoint signal for the next wafer to be processed.

However, the above feature is not disclosed in Li, and definitely not as utilizing an in-line monitoring by an integrated monitoring tool (feature (b) of Claim 1 as on record). Li discloses a method and apparatus for determining the endpoint for chemical mechanical polishing of a film on a wafer. According to Li, the endpoint corresponds to a polishing time

determined by setting operating parameters based upon a predetermined endpoint and an over polishing safety margin.

In order to preset an end-point target time, a "parameter setting" procedure is carried out. The "parameter setting" procedure is **an off-line procedure** whereby trace data is fed to the processing unit based upon polishing of a production wafer by an experienced operator. The technique of Li is directed to obtaining a "recipe" composed of suitable data for reproducing the results of an experienced operator and therein letting the production line run according to this trace data. As stated in Li (see Col. 6, lines 34-42), the "trace is monitored by the operator and when it flattens after an expected time has elapsed, polishing is manually stopped." Once acceptable trace data is acquired, "no more wafers need to be polished in order to set the process parameters ... Once the optimal set of parameters is found, they can be stored in a 'recipe,' and various recipes can be stored and retrieved based on the type of wafer/film being polished.". After setting the parameters, the Li system uses a running array or moving average (Col. 3, lines 54-67; Col. 4, lines 1-13).

Thus, Li fails to disclose or suggest the use of **an integrated monitoring tool for measuring the value of the thickness resulting from processing so as to adjust an end-point signal which is then used on subsequent wafers**. Furthermore, Li fails to disclose or suggest the method as now recited in the amended claims.

In contrast, the present invention is directed to a system for combining the benefits of end-point detection and integrated monitoring, namely monitoring in real-time or

with minimal delay while still maintaining full and accurate data on a localized wafer level. The present invention teaches use of an end-point detection and integrated thickness monitoring for closed-loop control using a continuously or periodically adjusted end-point signal. When the wafer initially enters the polisher, the end-point is determined by the control unit's target parameters. According to the invention, subsequent to polishing, the wafer is then transferred to an integrated monitoring tool for thickness measurements. The control unit receives data from the integrated monitoring tool and end point detector and therein analyzes the data to determine a correction value for the next-coming wafer.

More specifically, claim 26, now recites, among other things, applying an in-line monitoring by an integrated monitoring tool to said article after the completeness of said processing thereof, and measuring the thickness value resulting from the processing; analyzing the measured thickness value, and upon determining that the end-point signal is to be corrected by a correction value corresponding to the predetermined value of the thickness, adjusting said end-point signal by said correction value for using the corrected end-point signal for terminating the processing of another article in the stream of articles.

Similarly, claims 37 and 46 have been amended by reciting, among other things, a control unit associated with the end-point detector and with the integrated monitoring tool, the control unit being in-line operative to be responsive to data coming from the end-point detector and indicative of an endpoint-signal for terminating the processing of the article, and being adapted to continuously or periodically operate the integrated

monitoring tool to perform said measuring on the processed article to be responsive to the measured data coming from the integrated monitoring tool, so as to analyze the data coming from the end-point detector and the measured data from the integrated monitoring tool and upon determining that the end-point signal is to be corrected by a correction value corresponding to a predetermined value of the thickness of the article operating to adjust the end-point signal to achieve said predetermined value when processing further articles in the stream.

Regarding Sandhu, while this reference discloses real time wafer thickness monitoring and real time adjustment of the wafer parameters for particular wafers and a variety of wafer thickness calculation techniques are disclosed, the recited methods are neither disclosed nor suggested. Nor is it clear that there is an incentive to combine Sandhu with Li, given the disparate techniques used for wafer processing in each reference. Further, any combination of the references fails to disclose that the parameters sensed would then be adjusted and applied to the processing of subsequent wafers as now recited.

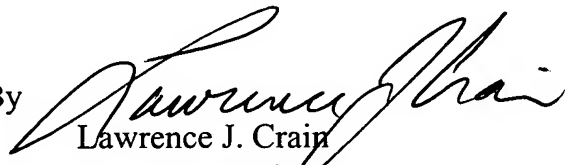
It is thus clear that using in Li optical sensors for end point detection as disclosed in Sandhu would not result in a combination of features of Claims 26, 37 or 46 as amended. Accordingly, the rejection based on a combination of Li et al and Sandhu is respectfully traversed.

Applicant submits that in view of the above-identified amendments and remarks, the claims in their present form are patentably distinct over the art of record.

Allowance of the rejected claims is respectfully requested. Should the Examiner discover there are remaining issues which may be resolved by a telephone interview, he is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,

GREER, BURNS & CRAIN, LTD.

By 
Lawrence J. Crain
Reg. No. 31,497
Attorney for Applicant

September 15, 2006.
300 S. Wacker Drive - Suite 2500
Chicago, Illinois 60606
Tel.: (312) 360-0080
Fax: (312) 360-9315
Customer No.: 24978
P:\DOCS\1811\70105\9R3156.DOC